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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,376	07/17/2003	Tomokazu Hayashi	10517/173	9710

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EXAMINER	
HODGE, ROBERT W	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/620,376	HAYASHI ET AL.	
	Examiner	Art Unit	
	ROBERT HODGE	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,8-14 and 17-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,8-14 and 17-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments, see Remarks, filed 2/12/08, with respect to the rejection of claim 3 under 35 U.S.C. 112, second paragraph have been fully considered and are persuasive. The rejection of claim 3 under 35 U.S.C. 112, second paragraph has been withdrawn.

Applicant's arguments filed 2/12/08 have been fully considered but they are not persuasive. Applicants state that Schmid does not teach a sealant made of a material which does not get dry or become solid, as recited in amended claim 1. The newly added recitation to claim 1 does not clearly define the instant invention and in fact raises some questions, such as what is defined as being dry, how dry is too dry or not dry enough, and what is defined as being solid, how solid is too solid or not solid enough. The Examiner has thoroughly reviewed the instant specification for specific examples of what materials would exhibit the newly recited limitations and has found no specific examples other than what is already recited in the Markush group of instant claim 1. Applicants refer the Examiner to a section of the Schmid reference where there is a supposed teaching away from the instant invention. However there are other areas of the Schmid reference that lead the Examiner to believe that the seal of Schmid does in fact read on the instant claims such as column 4, lines 9 and 10, where it states that the seal is preferably formed with an adhesive bond (i.e. pressure sensitive adhesive from the instant claims), column 5, lines 13-15, where it states that the preferred adhesives are selected to be compatible with the PEM cell and/or stack components, and column

5, line 25, where it states that the adhesive forms a resilient bond, which implies that the adhesive will maintain its shape (i.e. maintain an initial material state). Therefore due to the lack of specific examples of materials that exhibit the recited properties, the burden is shifted to applicants to show in the form of evidence (not arguments) that the seal of Schmid does not exhibit said properties. Regarding the last two lines of amended claim 1, said recitation is considered a function recitation and applies to the intended use of separating the components of the fuel cell, see MPEP 2114.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The remainder of applicants' arguments address newly added claims 23 and 24, which will be addressed in the grounds of rejection below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3, 4, 8-14 and 17-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 3, 4, 8-14 and 17-24 are indefinite for claiming the invention in terms of physical properties rather than the chemical or structural features that produce said properties. Ex parte Slob, 157 USPQ 172, states, "Claims merely setting forth physical characteristics desired in an article, and not setting forth specific composition which would meet such characteristics, are invalid as vague, indefinite, and functional since they cover any conceivable combination of ingredients either presently existing or which might be discovered in the future and which would impart said desired characteristics." Also, "it is necessary that the product be described with sufficient particularity that it can be identified so that one can determine what will and will not infringe." Benger Labs, Ltd v. R.K. Laros Co., 135 USPQ 11, In re Bridgeford 149 USPQ 55, Locklin et al. v. Switzer Bros., Inc., 131 USPQ 294. Furthermore, "Reciting the physical and chemical characteristics of the claimed product will not suffice where it is not certain that a sufficient number of characteristics have been recited that the claim reads only on the particular compound which applicant has invented." Ex parte Siddiqui, 156 USPQ 426, Ex parte Davission et al., 133 USPQ 400, Ex parte Fox, 128 USPQ 157.

Independent claims 1, 23 and 24 all recite that the sealant is made of a material which does not get dry or become solid. Said recitation is indefinite (as discussed above) because there is no definition in the claims or the instant specification that defines what type of material exhibits the above recited properties. Furthermore there

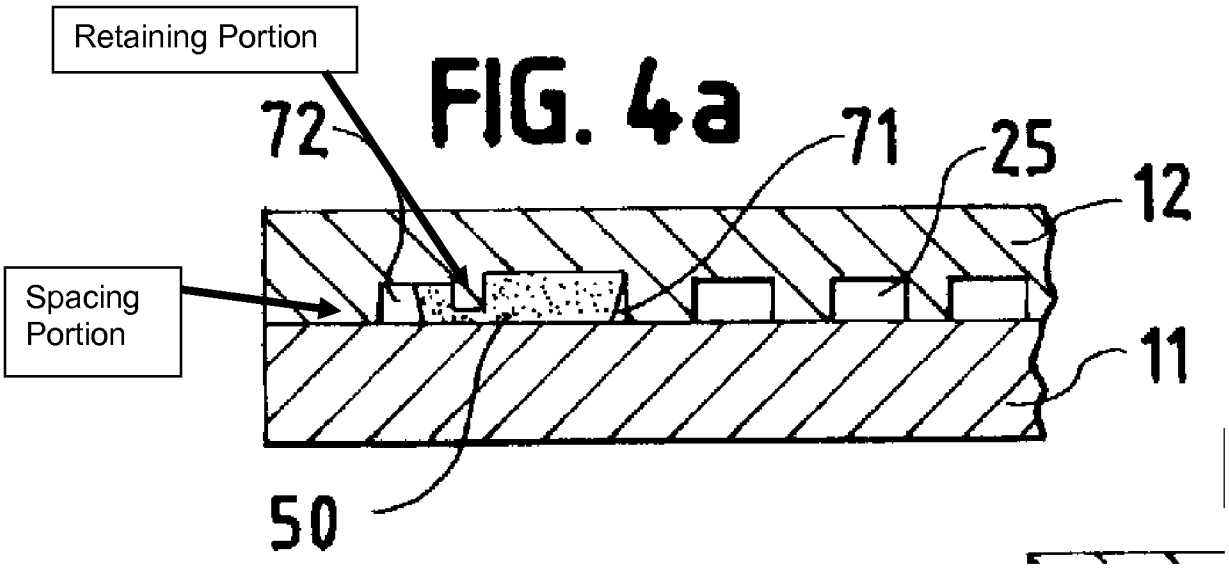
are no specific examples provided anywhere in the instant application stating which specific materials exhibit the above recited properties. The only examples are generic disclosures of "a gel material, high viscosity material, and pressure-sensitive adhesive material". Therefore as long as the prior art teaches a sealant that meets one of the generic recitations as listed above it will read on the claims as recited. Because of the dependency of claims 3, 4, 8-14 and 17-22 on claim 1, the same deficiency exists and they are thus included in this rejection.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3, 4, 8-14, 17-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,080,503 hereinafter Schmid.

Schmid teaches solid polymer electrolyte fuel cell stacks (which as defined by applicants in the instant specification paragraph [0048] is a low temperature type fuel cell) comprising a plurality of components including but not limited to separators and electrolyte membranes with an adhesive material (inherently pressure sensitive) that is elastomeric and is selected for its specific compatibility of physical and chemical characteristics to be used in solid polymer electrolyte fuel cell stacks, said adhesive material being adhesive and interposed between the plurality of fuel cell components wherein a retaining portion and a spacing portion are formed on a surface of a separator plate (illustrated in figure 4a below);



wherein the spacing portion is formed along an outer periphery of the separator, wherein the adhesive material, the spacing portion and the retaining portion are all formed within the fuel cell unit, the stack further comprising manifolds that are formed inside the electrochemically active area and the adhesive material is formed along the outer edge (see column 6, lines 43-46) (since the spacing portion is clearly at an outer periphery of the entire fuel cell unit and the manifold is formed at an interior position such as the electrochemically active area, the spacing portion will clearly be formed outside of the manifold) (see figure 4a, column 1, lines 55-61, column 2, lines 30-33, column 5, lines 12-46, column 6, line 22 – column 8, line 67). Schmid further teaches that the adhesive material can be electrically insulating and is applied across the substantial entire contact surfaces of the separator plates (see column 5, lines 25-26 and line 34 and column 8, lines 35-36). It is also quite clear that Schmid is using the same sealant 50 throughout the entire fuel cell and that said same sealant is also used on one of the components that has the gas passages, see Figures 3a, 3b, 3c, 5a and

5b. Furthermore the burden is shifted to applicants to show in the form of evidence (not arguments) that the seal of Schmid does not exhibit the properties as recited in claims 1 and 24 that is the sealant material does not get dry or become solid.

Schmid as described above teaches the claimed invention except for a spacing portion formed separately from the plurality of components (claim 1) and a retaining portion formed concave or convex toward the sealant (claim 11). With regards to these features the Examiner has found no criticality of either of the above listed features in the instant specification. For Example in paragraph [0054] the first sentence describes that the spacing portion may be integrally or separately formed. There is no disclosure of whether one formation is more critical than the other and furthermore the discussion of separately forming is only mentioned in the first sentence of paragraph [0054] and is not even illustrated in the drawings. Also in paragraph [0056] it is stated that "Rather than being such a concave or convex portion, the retaining portion 33 may merely be a plane portion…" this too shows no criticality to the shape of the retaining portion. Therefore it would have been obvious to one having ordinary skill in the art to separately form the spacing portion of Schmid since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art (Nerwin v. Erlichman, 168 USPQ 177, 179) and it further would have been obvious to one having ordinary skill in the art to form the retaining portion in either a convex or concave shape since it has been held that a change in shape is generally recognized as being within the level of ordinary skill in the art (In re Dailey 149 USPQ 47, 50 (CCPA 1966) and Glue Co. v. Upton 97 US 3, 24 (USSC 1878)).

Regarding claims 3 and 24, Schmid teaches in figure 3b two retaining portions 55 that face each other on separators of the fuel cell stack. At the time of the invention it would have been obvious to one having ordinary skill in the art to combine the embodiments of Figure 3b and 4a to provide two retaining portions that face each other and a spacing portion since the combination of the two embodiments provides a predictable variation of the Schmid invention. See MPEP 2141 (III) Rationale A, KSR v. Teleflex (Supreme Court 2007) and Boston Scientific Scimed Inc. v. Cordis Corp., 89 USPQ2d 1704 (Fed. Cir. 2009). It further would have been obvious to duplicate the retaining portion since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

Regarding claim 8, Schmid teaches the claimed invention except for another spacing portion on another component. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to provide an additional spacing portion on another component of the fuel cell of Schmid, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8. It should be noted that due to the many different embodiments disclosed in the instant specification embodying, 1, 2, 3, 4…etc spacing portions on separate components of the fuel cell no criticality is shown for having two spacing portions.

Regarding claim 22, as seen in figure 5a, Schmid teaches that the sealant 50 is disposed on both sides of manifold 30.

It is noted that claims 1 and 24 recite functional limitations of the intended use of separating components of the fuel cell, it is submitted that Schmid is fully capable of being separated as recited in the instant claims, see MPEP 2114.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid as applied to claim 1 above, and further in view of U.S. Pre-Grant Publication No. 2002/0197519 hereinafter Einhart.

Schmid does not teach that the retaining portion is concave or convex.

As seen in figures 8 and 9, Einhart teaches a concave retaining portion for a seal in a fuel cell assembly.

As stated above no criticality of the shape of the retaining portion has been found in the instant specification for said feature such as in paragraph [0056] wherein it states that "Rather than being such a concave or convex portion, the retaining portion 33 may merely be a plane portion…" and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to form the retaining portion in a concave shape in Schmid as taught by Einhart to provide a complex cross-sectional shape to retain the sealing material that provides a larger surface area for the sealing material to bond to and also since it has been held that a change in shape is generally recognized as being within the level of ordinary skill in the art (In re Dailey 149 USPQ 47, 50 (CCPA 1966) and Glue Co. v. Upton 97 US 3, 24 (USSC 1878)).

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid as discussed and applied above, and further in view of U.S. Pre-Grant Publication No. 2002/0031698 hereinafter Inoue.

Schmid does not teach that the sealant is a gel.

Inoue teaches a fuel cell stack assembly comprising a plurality of components that are sealed together using a gel sealant (abstract and paragraph [0020]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to substitute a gel sealant for the adhesive in Schmid as taught by Inoue in order to provide a uniform seal between the fuel cell components thereby making the sealing uniform and maintaining gas-tightness between the fuel cell components. Simple substitution of one known element (Inoue's Gel sealant) for another (Schmid's adhesive sealant) would achieve the predictable results of providing a uniform seal between the fuel cell components thereby making the sealing uniform and maintaining gas-tightness between the fuel cell components. See MPEP 2141 (III) Rationale B, KSR v. Teleflex (Supreme Court 2007).

It is noted that claim 23 recites functional limitations of the intended use of separating components of the fuel cell, it is submitted that Schmid is fully capable of being separated as recited in the instant claims, see MPEP 2114.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT HODGE whose telephone number is (571)272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Hodge/
Examiner, Art Unit 1795